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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,058	12/03/2004	Noriki Hayashi	51023-024	2869
20277 7590 03/28/2007 MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096			EXAMINER LAM, CATHY FONG FONG	
			ART UNIT	PAPER NUMBER
			1775	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/28/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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## Office Action Summary

Application No.

10/517,058

Applicant(s)

HAYASHI ET AL.

Examiner

Cathy Lam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>12-3-2004</u> . | 6) <input type="checkbox"/> Other: _____  |

***Claim Rejections - 35 USC § 112***

1. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In lines 4-5, the phrase “for printed wiring made by treating the surface of a board .....surface treatment method” is vague and indefinite, as it is unclear whether applicant is referring to the surface of the board or the surface of the conductor wiring, that requires the surface treatment. Clarification is required.

The examiner, in the meantime interprets this limitation as the surface of the board is roughened.

***Claim Rejections - 35 USC § 102/103***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Eichelberger et al (US. 4487811) or

Steigerwald et al (US 4248921) or Schneble Jr. et al (US 3560257) or Michaelson (US 4581301).

It is noted by the Examiner that claim is drafted in a product by process format. It is the product itself which must be new and unobvious. Unless some unexpected result is shown that occurs due to Applicant's specific process(es), different processing steps are not patentably distinguishing for claims to an article.

The present invention is directed to a printed wiring board comprised of an insulating substrate, a conductive paste and a metal layer; all in this named order. The conductive paste is etched and formed into a pattern before the metal layer is plated over the patterned conductive paste.

Eichelberger teaches a printed wiring board comprised of an insulating substrate (100), a conductive ink (101) and a conductive layer (102); all in the named order.

The conductive ink is comprised of finely divided metal powders and a polymer resin; wherein the metal powders constitute about 60-80 vol% of the conductive ink (col 6 L 15-18). The conductive ink applied to the substrate to achieve a desired conductive pattern, such that a (copper) metal layer is subsequently formed thereon (col 6 L 59-62 & col 8 L 44-46 & col 14 L 43-44).

Steigerwald discloses a printed circuit board comprised of a non-conductive substrate, a conductive paste and a metallic layer (Fig. 2).

The conductive paste comprised of organic polymer and metal particles (col 2 L 11-12). The conductive paste is formed onto the surface of the non-conductive

substrate in order for the metallic layer to be firmly adhered to the substrate via the conductive paste (col 2 L 23-26).

Schneble discloses a wiring board comprised of an insulating base (10), a catalytic composition (18) and a metal film (14); all in the named order.

The catalytic composition (18) is used for enhancing the bonding of the metal film (14) to the insulating base (10) (col 1 L 25-27 & col 2 L 36-39). The catalytic composition (or catalytic blank) is an organo-metallic compound which comprised of a noble metal and an organic resin (col 3 L 15-22 & col 4 L 20-23). The metal film (14) is electrolessly deposited over the insulating base via the catalytic blank (col 5 L 1-7).

The catalytic blank and the metal film (14) are subsequently formed into a wiring pattern (col 8 L 15-22).

Michaelson discloses a printed circuit board comprised of an insulating substrate (5), a seed layer (51) and a conductive layer (52).

The seed layer is comprised of conductive particles uniformly dispersed in a resinous binder; it is coated onto the insulating substrate in a pre-determined pattern (col 4 L 64-68).

The conductive layer (52) is plated over the seed layer to form a conductive pattern (col 5 L 1-2).

All of the above prior art teach a conductive paste that is applied over an insulating substrate and a metal layer is plated over the insulating substrate via the conductive paste or an organo-metallic compound.

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Eichelberger teaches the volume percentage of the metal powders, that meets the present invention if the metal powder is 60 vol%, i.e. 60/40 is 15.

Steigerwald teaches the weight % of the ingredients of the conductive paste (col 4 L 40-49). The other prior art are silent about the volume ratio.

All of the above prior art are silent about the substrate surface has an average roughness of 30-300nm.

However, in view of the prior art teachings, one skilled in the art would easily choose a workable volume ratio for the conductive filler and the binder because finding an optimum ratio involves only routine experimentations.


Furthermore, since the average roughness is in the nanometer range, the examiner is taking the position that such surface roughness is insignificantly small, or in other words, it does not have a rough surface, unless applicant can show some significances of such surface roughness with respect to the integrity of the present claimed product, the examiner is taking the position that the prior art products would perform the same job.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Cathy Lam  
Primary Examiner  
Art Unit 1775

cfl  
March 23, 2007